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(54) **CONNECTOR WITH FOOLPROOF STRUCTURE**

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(58) **Field of Classification Search** 439/676, 439/677, 680

See application file for complete search history.

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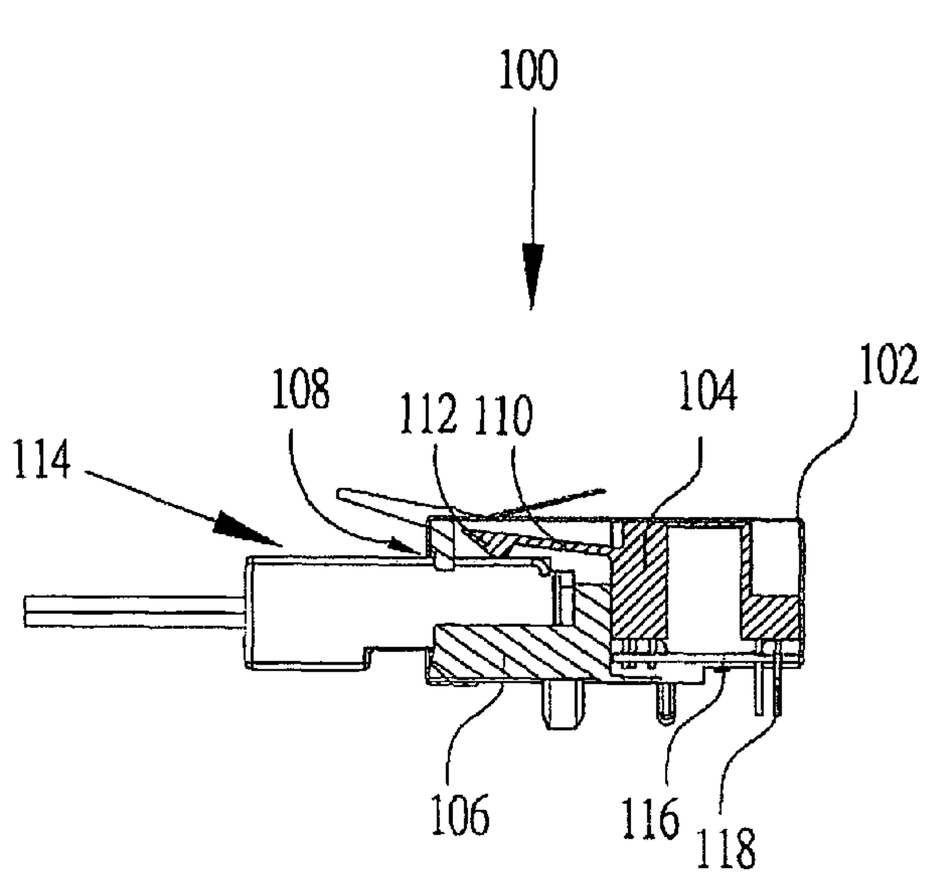
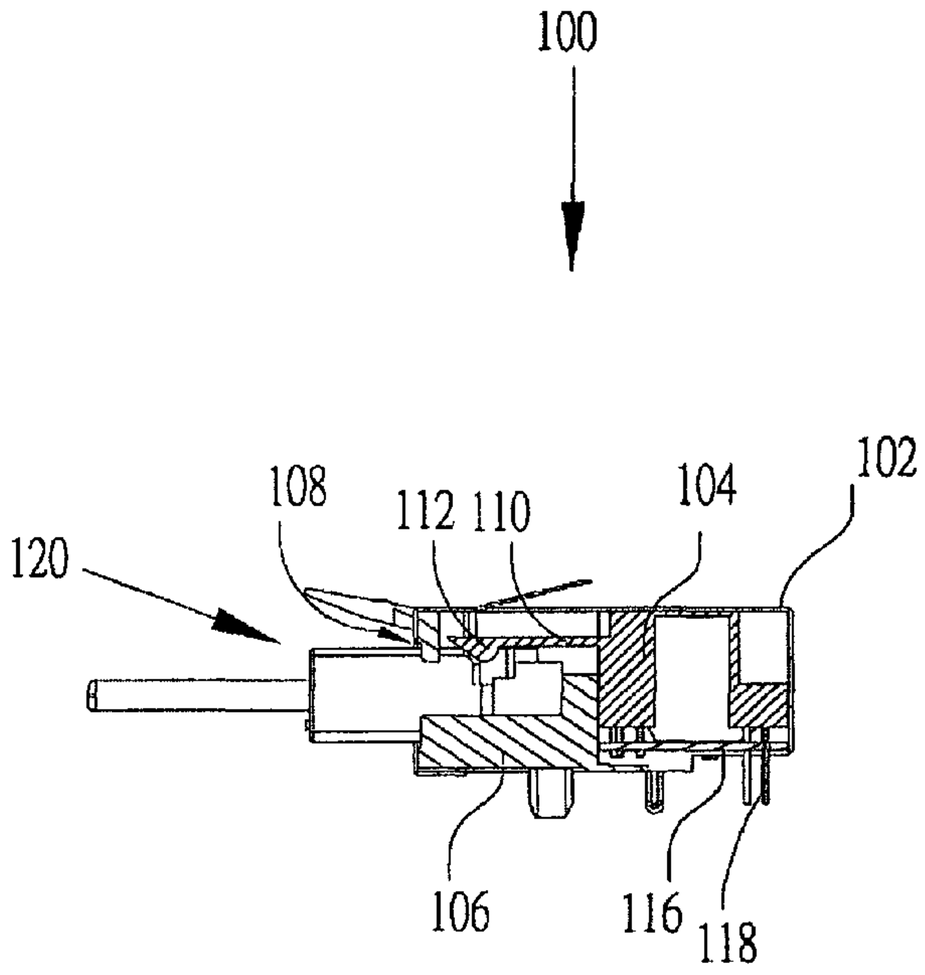
(57) **ABSTRACT**

A connector includes a housing and a base. The housing has a receiving hole for receiving a first-type plug. The base is assembled with the housing and has at least one foolproof structure. The foolproof structure and the base are formed as a single piece. The foolproof structure is protruded inside the receiving hole for blocking an insertion of an incompatible plug.

13 Claims, 2 Drawing Sheets





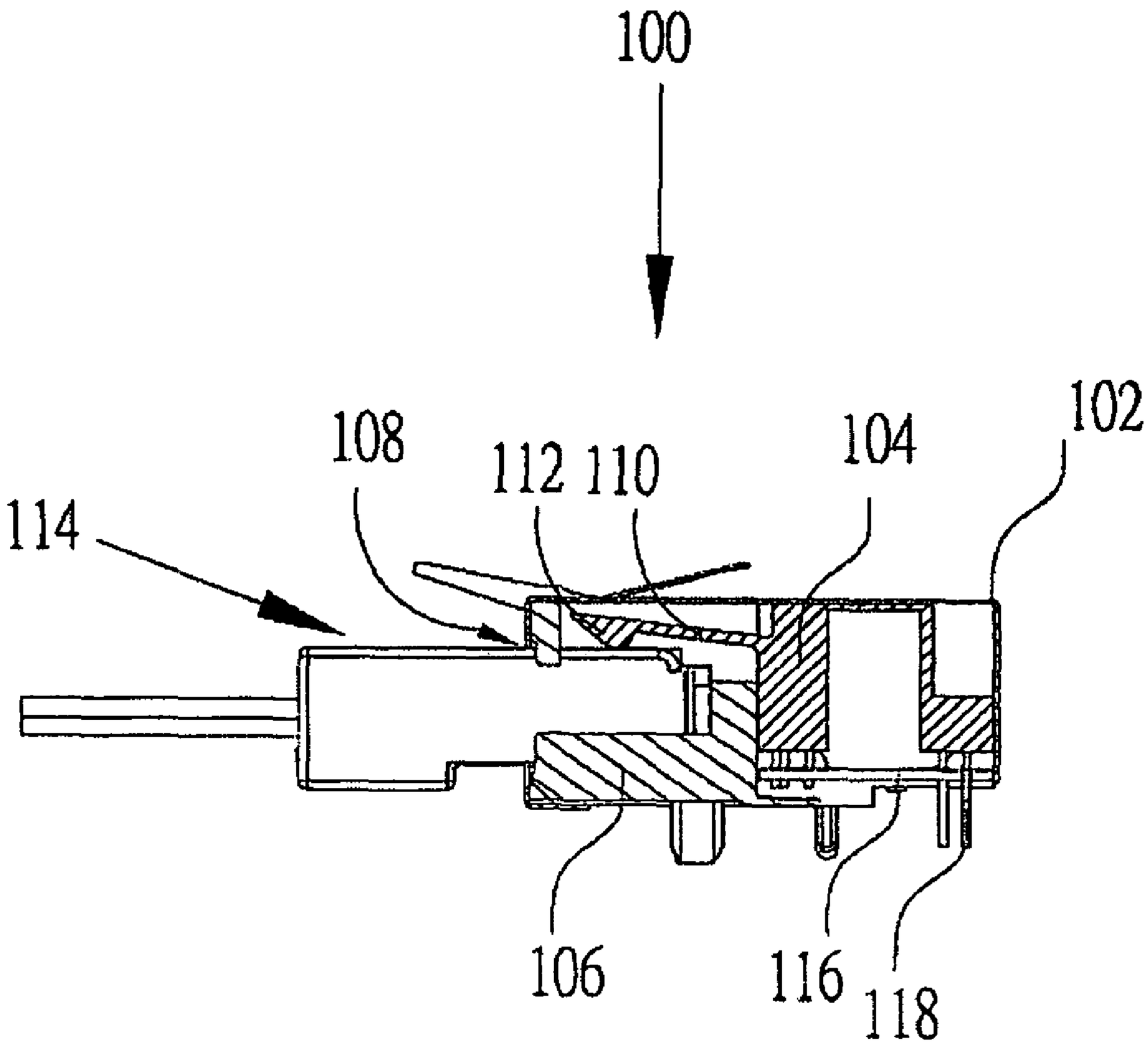


FIG. 1

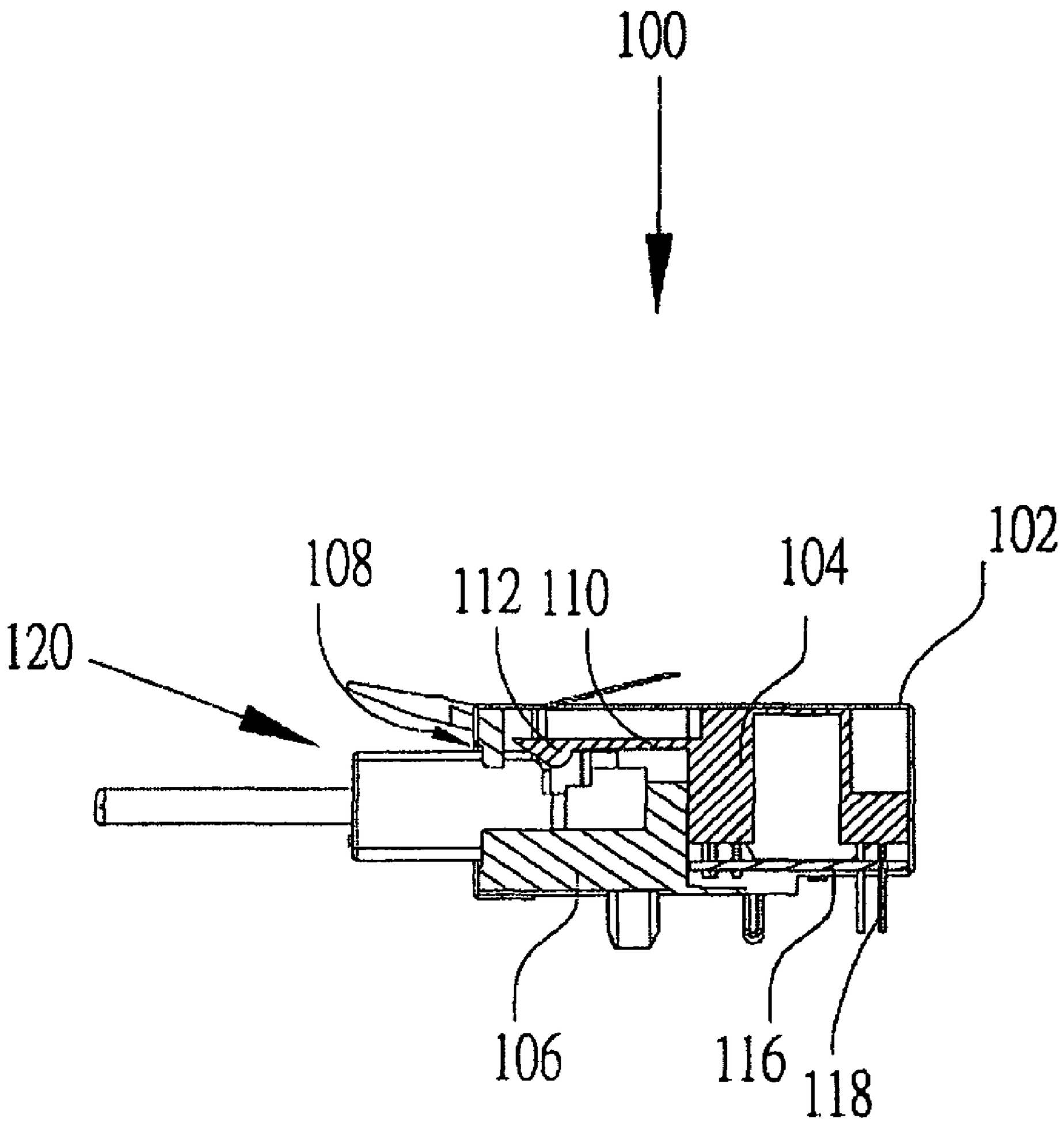


FIG. 2

CONNECTOR WITH FOOLPROOF STRUCTURE

CROSS REFERENCE TO RELATED APPLICATIONS

This Non-provisional application claims priority under 35 U.S.C. §119(a) on Patent Application No(s). 097151543 filed in Taiwan, Republic of China on Dec. 31, 2008, the entire contents of which are hereby incorporated by reference.

BACKGROUND OF THE INVENTION

1. Field of Invention

The present invention relates to a connector and, in particular, to a connector with high yield rate, less production time, simplified manufacturing process and low cost.

2. Related Art

In general, because the RJ11 connector plug and the RJ45 connector plug are similar, they are easily inserted into incompatible jacks. The connector having no appropriate foolproof structure disposed thereon will be damaged due to an error of insertion.

Accordingly, the conventional connector is provided with an external foolproof structure so as to prevent incorrect insertion. Because the foolproof structure is an external element, additional molding process, positioning process and fastening process are required during the production process of the conventional connector, resulting in problems of low yield rate, more production time, complicated process and high cost.

SUMMARY OF THE INVENTION

In view of the foregoing, the invention is to provide a connector with high yield rate, less production time, simplified manufacturing process and low cost.

To achieve the above, the present invention discloses a connector including a housing and a base. The housing has a receiving hole for receiving a first-type plug. The base is assembled with the housing and has at least one foolproof structure. The foolproof structure and the base are formed as a single piece. The foolproof structure is protruded inside the receiving hole to block an insertion of an incompatible plug.

The connector further includes a circuit board and a shielding. The circuit board is connected to the base, and the shielding covers the housing and the base. The shielding is made of metal or a conductive material.

In the connector of the present invention, the housing and the base could be plastic, carbon fiber or insulating material. The foolproof structure has a barricade, and the barricade and the foolproof structure are formed as a single piece. An extension of the barricade tilts with an angle related to that of the end of the foolproof structure. The foolproof structure is deformed or rotated when the first-type connector is inserted into the receiving hole.

In addition, the base is formed by injection molding, molding or cutting. The base is disposed at back side of the housing. The base further includes at least one lead electrically connected to a circuit board, an electric element or a system. The quantity of the foolproof structure can be one or more.

Moreover, the connector is an RJ11 connector, an RJ45 connector, a USB connector or a bridge.

In summary, the foolproof structure of the connector according to the present invention is extended out of the base so that additional forming, positioning and fastening process are not in need so as to increase the yield rate and decrease the production time, process complication and production cost. Moreover, when the material of the base is plastic, the foolproof structure has advantages of better elasticity, lower cost, superior durability, easier forming and precise positioning.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will become more fully understood from the subsequent detailed description and accompanying drawings, which are given by way of illustration only, and thus are not limitative of the present invention, and wherein:

FIG. **1** is a sectional view of a connector and a first-type plug according to the present invention; and

FIG. **2** is a sectional view of a connector and a second-type plug according to the present invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention will be apparent from the following detailed description, which proceeds with reference to the accompanying drawings, wherein the same references relate to the same elements.

FIG. **1** is a sectional view of a connector **100** and a first-type plug **114** according to the present invention. Referring to FIG. **1**, the connector **100** includes a housing **106** and a base **104**. The connector **100** can be an RJ11 connector, an RJ45 connector, a USB connector or a bridge.

The housing **106** has a receiving hole **108** for receiving the first-type plug **114**. The material of the housing **106** can be plastic, carbon fiber or insulating material.

The base **104** is assembled with the housing **106**. More specifically, the base **104** is disposed at back side of the housing **106**. The base **104** has at least one foolproof structure **110**. The foolproof structure **110** and the base **104** are formed as a single piece. The material of the base **104** can be plastic, carbon fiber or insulating material. The base **104** can be formed by injection molding, molding or cutting.

The foolproof structure **110** is protruded inside the receiving hole **108**. When a first-type plug **114** is inserted into the receiving hole **108**, the foolproof structure **110** is rotated or deformed so that the first-type plug **114** can be inserted into the receiving hole **108** completely. Moreover, as shown in FIG. **2**, when an incompatible plug, such as a second-type plug **120**, is inserted into the receiving hole **108**, the foolproof structure **110** is not rotated or deformed so as to block movement of the second-type plug **120**. The quantity of the foolproof structure **110** can be one or more.

The foolproof structure **110** includes a barricade **112**. The barricade **112** and the foolproof structure **110** are formed as a single piece, and an extension direction of the barricade **112** tilts with an angle related to that of the end of the foolproof structure **110**. The barricade **112** can also prevent the connector **100** from misinsertion.

The connector **100** includes a circuit board **116** connected to the base **104**. The circuit board **116** has a circuit or an electric element disposed thereon, thereby achieving calculation, control, transmission or filter function.

The base **104** further includes at least one lead **118** electrically connected to the circuit board **116**, electric element or system. The lead **118** can be also served as a link terminal between the first-type plug **114** and the circuit board **116**, electric element or system.

The connector further includes a shielding **102**. The shielding **102** covers the housing **106** and the base **104**, thereby protecting the housing **106** and the base **104**, and providing the noise shielding for the connector **100**. The shielding **102** is metal or conductive material.

In summary, the foolproof structure of the connector according to the present invention is extended out of the base so that additional forming, positioning and fastening process are not in need so as to increase the yield rate and decrease the production time, process complication and manufacturing cost. Moreover, when the material of the base is plastic, the foolproof structure has advantages of better elasticity, lower cost, superior durability, easier forming and precise positioning.

Although the present invention has been described with reference to specific embodiments, this description is not meant to be construed in a limiting sense. Various modifications of the disclosed embodiments, as well as alternative embodiments, will be apparent to persons skilled in the art. It is, therefore, contemplated that the appended claims will cover all modifications that fall within the true scope of the present invention.

What is claimed is:

1. A connector comprising:

a housing having a receiving hole for receiving a first-type plug; and

a base assembled with the housing and having at least one foolproof structure protruding inside the receiving hole;

wherein the base further comprises at least one lead electrically connected to a circuit board, an electric element or a system;

wherein the foolproof structure is rotated or deformed when a first-type plug is inserted into the receiving hole; and

wherein the foolproof structure and the base are formed as a monolithic piece, and the foolproof structure is used to block an insertion of an incompatible plug.

2. The connector according to claim **1**, wherein the material of the housing is plastic, carbon fiber or insulating material.

3. The connector according to claim **1**, wherein the base is plastic, carbon fiber or insulating material.

4. The connector according to claim **1**, wherein the connector is an RJ11 connector, an RJ45 connector, a USB connector or a bridge.

5. The connector according to claim **1**, wherein the quantity of the foolproof structure is one or more.

6. The connector according to claim **1**, wherein the base is disposed at back side of the housing.

7. The connector according to claim **1**, wherein the base is formed by injection molding, molding or cutting.

8. The connector according to claim **1**, further comprising a circuit board connected with the base.

9. The connector according to claim **8**, wherein the circuit board has a circuit or an electric element disposed thereon.

10. The connector according to claim **1**, further comprising a shielding covering the housing and the base.

11. The connector according to claim **10**, wherein the shielding is metal or conductive material.

12. The connector according to claim **1**, wherein the foolproof structure comprises a barricade and an extension direction of the barricade tilts with an angle related to that of the end of the foolproof structure.

13. The connector according to claim **12**, wherein the barricade and the foolproof structure are formed as a single piece.

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